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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,004	09/11/2000	Kazuo Toraichi	A-371	4200
802	7590	02/26/2007	EXAMINER	
PATENTTM.US			DO. CHAT C	
P. O. BOX 82788			ART UNIT	
PORTLAND, OR 97282-0788			PAPER NUMBER	
			2193	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/601,004

Applicant(s)

TORAICHI ET AL.

Examiner

Chat C. Do

Art Unit

2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This communication is responsive to Amendment filed 01/06/2007.
2. Claims 1-2, 4, and 6 are pending in this application. Claims 1 and 6 are independent claims. In Amendment, claims 3, 5, and 7-8 are cancelled. This Office Action is made non-final after a RCE filed 01/16/2007.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-2 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1, the limitations cited in the claims fail to point out specifically the components for the interpolation system as an intended system. The claim only discloses the property of the sampling function $H(t)$ but does not clearly and particularly point out what is the structure of the system.

Thus, claims 2 and 4 are also rejected for being dependent on the rejected base claim 1.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-2, 4, and 6 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-2, 4, and 6 cite a system for performing interpolation according to a predetermined mathematical algorithm. In order for claims to be statutory, claims must either include a practical application or a concrete, useful, and tangible result. However, claims 1-2, 4, and 6 merely disclose properties of sampling function $H(t)$ or components for interpolating samples without disclosing a practical application nor a useful and tangible result. Even though a claim discloses an image value is resulted of interpolated of plurality of image data values, but the result is not useful and tangible since the output of interpolation is just another value as result of interpolation. Therefore, claims 1-2, 4, and 6 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-2, 4, and 6 are rejected under 35 U.S.C. 103(a) as being obvious over Masaru et al. ("A Smooth Signal Generator Based on Quadratic B-spline Functions") in view of Maltsev et al. (U.S. 6,018,597).

Re claim 1, Masaru et al. disclose a two variable data interpolation system (e.g. abstract, Introduction section lines 16-18 page 1252, Preliminaries section lines 1-5 page 1252, wherein two variable data would be h and k) for processing data (e.g. discrete-time signal in Preliminaries section line 3 page 1252), wherein an value between a plurality of discrete data values is interpolated by performing convolution operation (e.g. equations 1-6 page 1252, particularly equations 3-4 for convolution) corresponding to the plurality of discrete data positioned at equal intervals (e.g. Preliminaries section lines 1-4 page 1252) in a two dimensional space using a sampling function (e.g. phi-function as seen in Figure 1 in page 1253 and equation 2 in page 1252) that is differentiable finite times (e.g. right column in page 1253) and has values of a local support (e.g. Figure 1 and equation 2 wherein parameter h and l are normalized or set to 1, then equation 2 will have specific finite values in a range $[-3/2, 3/2]$ and zero value outside that range; left column lines 1-5 page 1253) wherein with letting a third order B spline function be $F(t)$, the sampling function, $H(t)$ is defined as follows: $H(t) = -F(t+1/2)/4 + F(t) - F(t-1/2)/4$ (e.g. equation 4-6). Masaru et al. fail to disclose that the data is image data. However, Maltsev et al. disclose in Figure 4 an interpolation process of an image data (e.g. 102-106 in Figure 4) utilizing convolution. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add image data into the interpolation system as seen in Maltsev et al.'s Figure into Masaru et al.'s invention because it would

enable to efficiently reduce or minimize errors and noise in modifying image data (e.g. col. 1 lines 32-45).

Re claim 2, Masaru et al. further disclose the sampling function is a function that is differentiated only once over a whole region (e.g. capable of differentiated only once over a region due to smooth function, Introduction section lines 16-18 page 1252 and right column in page 1253).

Re claim 4, Masaru et al. further disclose the third order B spline function $F(t)$ is disclosed in page 7-8 (e.g. $F(t)$ is as function disclose in equation 2 page 1252 right column wherein $h=1$ and $l=0$ with scaling factor).

Re claim 6, it is an apparatus claim of claim 2. Thus, claim 6 is also rejected under the same rationale as cited in the rejection of rejected claim 2.

Response to Arguments

9. Applicant's arguments filed 01/16/2007 have been fully considered but they are not persuasive.

a. The applicant argues in page 6 for claims that the cited primary reference by Masaru fails to disclose the sampling function which has a local support because the B-spline function of equation 2 is not a sampling function.

The examiner respectfully submits that the sampling function as cited in equation (3) is bounded by the B-spline function wherein the equation 3 is just equation 2 with exponential constant. Thus, mathematically the sampling function cited in

equation 3 is a bounded quadratic B-spline function cited in equation 2 with exponential constant at predetermined values l and k (e.g. setting $l = k = 0$).

- b. The applicant argues in page 7 for claims that the sampling function is not a function of a local support since the function converges to 0 at infinity as clearly seen in Figure 1 and corresponding equation 3.

The examiner respectfully submits that Figure 1 is a local support function which is represented for equation (3) which k is set at 0 and l is set at $\{t_2/h - 3/2\}$. By setting these parameters to the above fixed numbers, the equation 3 will have a local support as a sampling function for used to interpolate the samples.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

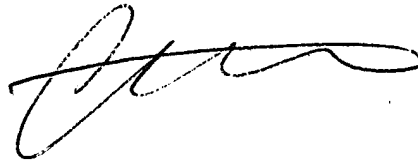
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

February 16, 2007

A handwritten signature in black ink, appearing to read 'Chat C. Do', with a stylized, flowing script.